



Great Western Operating Company, LLC

RIO LC 12-371HN

API # 05-001-10470

Surface

March 11, 2020

Quote #: QUO-43362-Q3M7J1

Execution #: EXC-25086-M8T6Y902



Great Western Operating Company, LLC

Great Western Operating Company, LLC | 1801 Broadway, Suite 500 | Denver, CO 80202

Dear Great Western Operating Company, LLC,

Thank you for the opportunity to provide cementing services on this well. BJ Services strives to achieve complete customer satisfaction. If you have any questions regarding the services or data provided, please contact BJ Services at any time.

Sincerely,
Jason Creel
Field Engineer I | (307) 256-0306 | Jason.Creel@BJServices.com

Field Office
1716 East Allison Rd., Cheyenne WY. 82007 | (307) 638-5585

Sales Office
999 18th St. Suite 1200, Denver, CO. 80202 | (281) 408-2361

BJ Cementing Treatment Report

SERVICE SUPERVISOR	Eric Dewit	RIG	White Mountain
DISTRICT	Cheyenne, WY	COUNTY	ADAMS
SERVICE	Cementing	STATE / PROVINCE	CO

WELL GEOMETRY

TYPE	ID (in)	OD (in)	WEIGHT (lb/ft)	MD (ft)	TVD (ft)	EXCESS (%)	GRADE	THREAD
Casing	8.92	9.63	36.00	2,036.00	2,035.00		J-55	LTC
Open Hole	13.50	0.00	0.00	2,036.00	2,035.00	30.00		

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	1,991.25
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	2720.00
Top Plug Size	9.630	Max Casing Pressure - Operated (psi)	1500.00
Centralizers Used	Yes	Pipe Movement	None
Centralizers Quantity	20.00	Job Pumped Through	Manifold
Centralizers Type	Bow	Top Connection Thread	LTC
Landing Collar Depth (ft)	1,991.25	Top Connection Size	9.625

CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	Mud Density In (ppg)	8.40
Circulation Prior to Job	Yes	Mud Density Out (ppg)	8.40
Circulation Time (min)	30.00	Solids Present at End of Circulation	No
Circulation Rate (bpm)	5.00	Flare Prior to / during the Cement Job	No
Circulation Volume (bbls)	150.00	Gas Present	No
Lost Circulation Prior to Cement Job	No		

TEMPERATURE

Ambient Temperature (°F)	50.00	Slurry Cement Temperature (°F)	56.00
Mix Water Temperature (°F)	55.00		

Client: Great Western Operating Company, LLC

Well: RIO LC #12-371HN

Well API: 05-001-10470

Start Date: 3/11/2020

End Date: 3/11/2020



FLUID DETAILS

FLUID TYPE	FLUID NAME	DENSITY (ppg)	YIELD (Cu Ft/sk)	H ₂ O REQ (gals/sk)	PLN TOP FLD (ft)	LENGTH (ft)	VOL (sk)	VOL (Cu Ft)	VOL (bbls)
Spacer / Pre Flush / Flush	Water	8.3300			0.00				20.0000
Tail Slurry	BJCem S100.3.XC	14.5000	1.3902	6.81	0.00	2,000.00	930	1293.0000	230.3000
Displacement Final	Water	8.3300			0.00			0.0000	151.4000

FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
Tail Slurry	BJCem S100.3.XC	CEMENT, ASTM TYPE III	100.0000	PCT

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	5.00
Calculated Displacement Vol (bbls)	154.00	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	154.00	Amt of Spacer to Surface	45.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0.00
Bump Plug	Yes	Amt Bled Back After Job	1.50
Bump Plug Pressure (psi)	1518.00	Total Volume Pumped (bbls)	452.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	No
Cement Returns During Job	Yes	Lost Circulation During Cement Job	No

BJ Cementing Event Log

Surface - Cheyenne, WY - Eric Dewit

SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
1	03/11/2020 00:00	Callout					Customer calls with an RTS of 6:00 on 3/11/20 Crew gets equipment, and materials ready to leave the yard
2	03/11/2020 03:30	Depart for Location					Leave yard to travel to location
3	03/11/2020 05:30	Arrive on Location					Arrive on location, rig is getting ready to start running casing. Have a pre-rig up safety meeting before spotting trucks
4	03/11/2020 05:40	Spot Units					
5	03/11/2020 05:45	Rig Up					Rig up water, bulk, and treating iron.
6	03/11/2020 06:45	Rig					Waiting on rig to run casing
7	03/11/2020 14:30	STEACS Briefing					Pre-job safety meeting with BJ crew, Rig crew, and Company man
8	03/11/2020 14:50	Rig Up					Rig up the rig floor
9	03/11/2020 14:59	Other (See comment)	8.3400	2.80	3.00	80.00	Load pumps and lines
10	03/11/2020 15:02	Pressure Test	8.3400	0.00	0.00	2806.00	Test pumps and lines
11	03/11/2020 15:07	Pump Spacer	8.3400	4.00	42.00	95.00	Pump fresh water ahead + Dye (Head started to leak form the release pin) kept pumping while trying to figure out where exactly it was coming from. Ended up pumping a total of 42 bbls of fresh water ahead instead of the 20 as planned
12	03/11/2020 15:21	Equipment Issue					Removed cement head, and rigged up a swage to pump the job (per customer)
13	03/11/2020 15:35	Other (See comment)	8.3400	4.00	3.00	105.00	Pump 3 bbls to make sure circulating swage is not leaking
14	03/11/2020 15:38	Pressure Test	8.3400	0.00	0.00	2806.00	Pressure test lines again
15	03/11/2020 15:43	Pumping Cement	14.5000	5.60	158.00	320.00	Pump 930 sks of Type III Cement @14.5 ppg (Yield: 1.39 Mix Water: 6.81)
16	03/11/2020 16:16	Equipment Issue	14.5000	0.00	0.00	0.00	Had to shut down due to our knife gate sticking
17	03/11/2020 16:17	Pumping Cement	14.5000	3.10	8.00	166.00	Start mixing pumping cement again
18	03/11/2020 16:20	Product Quality Issue	8.3400	0.00	0.00	0.00	Shut down due to product delivery issue (Bulk truck CTF-008 Rear Pod)
19	03/11/2020 16:22	Pumping Cement	8.3400	3.10	28.00	86.00	Start mixing and pumping cement again

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Well Name / API: RIO LC #12-371HN / 05-001-10470



Quote #: QUO-43362-Q3M711

Plan #: ORD-25086-M8T6Y9

Execution #: EXC-25086-M8T6Y902

20	03/11/2020 16:30	Equipment Issue	8.3400	0.00	0.00	0.00	Mixing system on the pump powdered off, had to shut down to clean it out
21	03/11/2020 16:38	Pumping Cement	8.3400	4.10	36.00	320.00	Start mixing and pumping cement again
22	03/11/2020 16:46	Drop Top Plug					
23	03/11/2020 16:58	Pump Displacement	8.3400	7.20	0.00	86.00	Send plug start fresh water displacement + Biocide (provide by the rig)
24	03/11/2020 17:03	Pump Displacement	8.3400	7.10	35.00	131.00	Caught up to cement
25	03/11/2020 17:10	Spacer Back-to-Surface	8.3400	7.00	80.00	509.00	Started getting some dye to surface
26	03/11/2020 17:18	Pump Displacement	8.3400	2.80	135.00	542.00	Drop rate to land the plug
27	03/11/2020 17:23	Cement Back-to-Surface	8.3400	2.80	149.00	602.00	Start seeing cement to surface
28	03/11/2020 17:25	Land Plug	8.3400	2.80	154.00	1518.00	5 bbls of cement to surface (start 30 min casing test - 1518 psi)
29	03/11/2020 17:35	Pressure Test	8.3400	0.00	0.00	1525.00	PSI 10 min into casing test - 1525 psi
30	03/11/2020 17:45	Pressure Test	8.3400	0.00	0.00	1530.00	PSI 20 min into casing test - 1525 psi
31	03/11/2020 17:58	Check Floats	8.3400	0.00	0.00	0.00	Check floats (floats held. 5 bbls back) Ending pressure on casing test was 1,542 psi
32	03/11/2020 18:00	STEACS Briefing					Pre-rig down safety meeting
33	03/11/2020 18:05	Rig Down					Rig everything down



JobMaster Program Version 5.00C1
Job Number:
Customer: Great Western
Well Name: Rio LC 12-371HN

